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Iron and steel

More than for any other industrial products, the production and the distribution of iron and steel took place against the regional and then worldwide background of material, financial and political constraints. Of crucial importance was the intervention of the states, the international political context with rearmament moments and wars, various economic crises, the exporting capacity of producing countries, the emergence of new national competitors and ongoing technological innovations and the growth of replacement products. After the Second World War, this trade fell under the liberalization movement of world trade until the crisis of the 1980s. Since then, there have been important tensions and crises on the world iron and steel market.

International trade in steel experienced a formidable explosion, much more than that of iron and steel making, soaring after the middle of 19th century, from a negligible part of the production marketed out of the producing countries to nearly 45 per cent nowadays. This very strong growth was accompanied by a widening of production areas (five major producing countries at the beginning of the century, 20 in 1950, and 80 in the 1980s) which led to total globalization of the iron and steel trade, although for a long time much of this was regional in scale.

After 1815, the European iron and steel market opened with English metallurgical products. Traditional steels (crucible iron) disappeared thanks to Britain's new, low-cost production technology (the puddling process), but the innovation took a long time to be adopted on the Continent, mainly for financial reasons. The production of iron and steel remained little marketed outside national borders until the middle of the 1860s.

New inventions (the Bessemer converter, 1855 and the Siemens-Martin process, 1865) upset the world market: whereas steel had until then been an expensive product, manufactured in small quantities (world production 1848: 70,000 tons), its expansion became phenomenal (600,000 tons in 1867, 10 million tons in 1877). Thereafter, a new process, the Thomas process (1878) further increased the quality of the steel, whose uses seemed unlimited. Its production moved from small factories to modern integrated units, concentrated in coal areas near large consumption markets, mostly connected to the sea (via a river system).

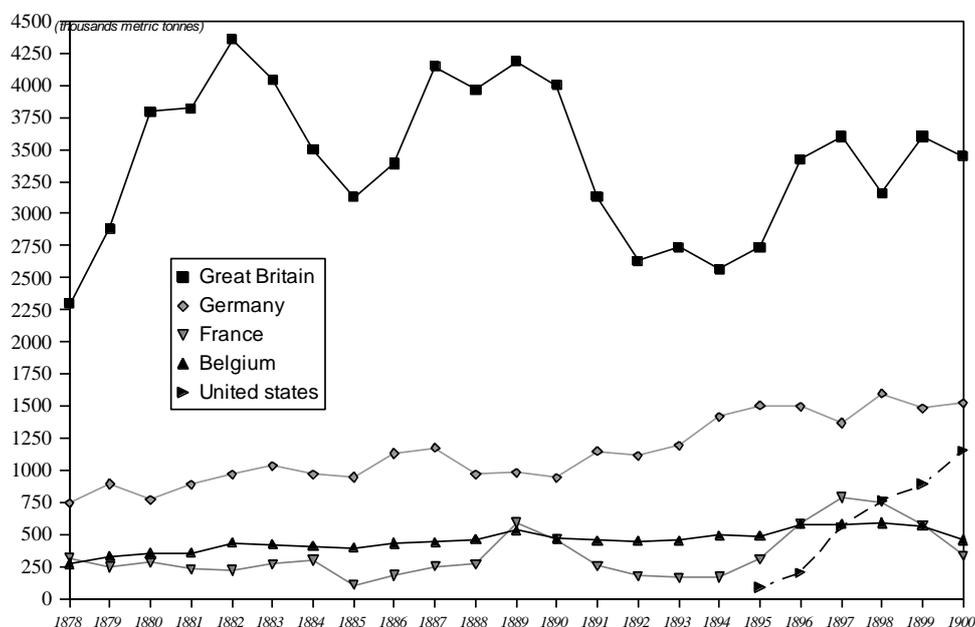
Technologies were widely shared between Great Britain and the Continental European countries, primarily France, Germany and Belgium, which had the main European coal mines. However, for the middle of the 19th century one can speak of hegemonic British domination in the world market (1.6 million tons sold in 1866) thanks to its great technological advance, to very low raw material costs, and to early agreements between producers. Britain's productivity and low prices compared favourably with those of its European or American competitors.

After 1880 another phase of the competition started, and British advantages were steadily reduced (see Figure 1). Until the end of the 1870s, European (French, Belgian, German) and American exports had remained unimportant, because British products were cheaper (by as much as 50 per cent). In 1881, Great Britain exported 3.8 million tons of iron and steel, representing 47 per cent of its total production. The period between 1870 and 1895 saw the progressive emergence of Germany as an exporter. Whereas this country had occupied a negligible place until then because of the very high profit margins it sought to make, the abolition of the Zollverein (German Empire Customs Union) led to declining prices, and German exports went from 241,000 tons in 1871 to 1.1 million in 1881. However, the Americans remained importers because of their high price levels.

Between 1895 and 1913, the British share of steel exports quickly declined, and Great Britain even became a net importer (approximately 200,000 tons in 1880, more than 2 million tons in 1913). The evolution of German and American trade in iron and steel was diametrically different. During the 1890s crisis, German exports increased considerably, exceeding 5 million tons in 1913. The United States also became a main exporter (almost 3 million tons in 1913), while its imports fell. These changes reflected declining price levels: from the 1890s onwards, American and German prices fell to the same level as British ones, sometimes even lower.

At the beginning of the 20th century, demand was high and supply followed: 30 million tons in 1900, 100 million tons during the war. But the marketed share remained modest (5 per cent on average), because of a rather general protectionism, a retention of iron and steel products by the industrialized countries for their own development, and also relatively weak prices of current steels which made them not very competitive at long distances. Therefore, trade was organized on a regional scale.

Figure 1 Iron and steel exports of the five major producers 1878–1900



Source: Duncan (1961)

The First World War changed the situation through globalization of supply (see Table 1). In spite of the intensification of manufacturing, European countries still had to import from the United States (until then, the transatlantic trade had remained very small, US sales being especially directed towards other countries of the Americas). It was the first fundamental upheaval in the organization of steel markets.

Steel markets used to be organized on a national scale, with the installation of single sales counters, parallel to the general trend toward a national economic concentration movement. Before the First World War there were also bilateral agreements among European countries, but it was due to private initiatives that these agreements succeeded. The interwar period saw their apogee.

In 1926 the International Steel Trust (ISC) between Germany, France, Belgium and Luxembourg was signed. Quickly associate members were added: Austria, Hungary, Czechoslovakia (1927), and then the Steel Export Association of America (1928). The objective was to regulate

production by creating quotas for each country and preparing the constitution of transnational common sales agencies. With the world economic crisis, the ISC was broken up, but a new agreement was signed as early as 1932. It was much more flexible and divided the export markets, and was followed by price agreements.

The general rise of European iron and steel production in the interwar period turned the European Continent into the first world exporter, with its share of exported production reaching 10 per cent. However, competition for raw material supplies grew, and there was a strong expansion of the products of the USSR and Japan, as well as the development of new producers in the Commonwealth (Australia, India, South Africa and Canada).

After the Second World War, there were problems of restructuring of the iron and steel industry, but it expanded greatly, thanks to the growth of consumer societies in Europe and to a major technological breakthrough, continuous casting, which spread under the Marshall Plan, and Europeans made a vigorous entry into the flat-products market; 200 million tons were produced in 1950 and 700 million tons in 1973-74. From the beginning of the century, the steel world production had increased by more than twentyfold. The growth opportunities seemed unlimited.

Table 1 Iron and steel exports (thousand metric tonnes) of the five major producers as a percentage of world production 1913–1938

Year	Exports of the five producers*	World production**	%
1913	16,472	85,900	19.2
1920	11,452	74,700	15.3
1921	7,985	46,000	17.4
1922	12,510	70,700	17.7
1923	12,250	80,400	15.2
1924	13,136	80,400	16.3
1925	15,637	92,100	17.0
1926	17,715	95,000	18.6
1927	20,652	102,000	20.2
1928	20,732	109,900	18.9
1929	21,093	120,900	17.4
1930	17,133	95,100	18.0
1931	13,619	69,700	19.5
1932	10,086	49,800	20.3
1933	10,589	68,100	15.5
1934	12,015	82,500	14.6
1935	11,482	99,700	11.5
1936	11,742	124,100	9.5
1937	15,662	135,400	11.6
1938	11,330	109,800	10.3

* USA, UK, Germany, France and Belgium-Luxembourg.

** Crude steel.

Sources: Duncan (1961) for exports; Stahl-Zentrum (2005/06) for world production.

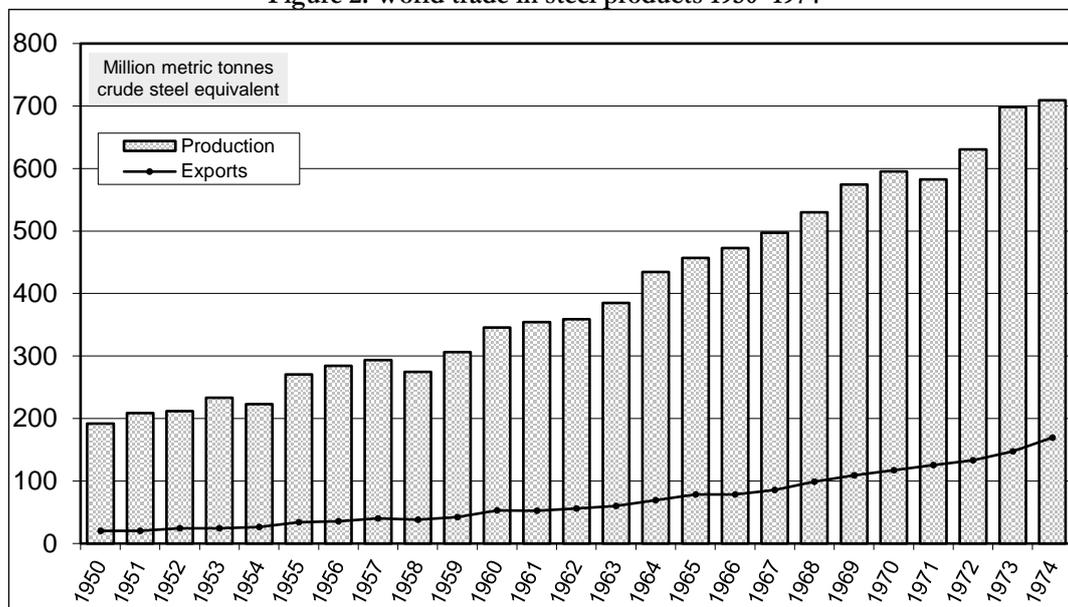
However, the distribution of Iron and steel production and their trade changed. New producers developed their own steel industry (Norway and the Netherlands) while others renovated theirs (Italy). The British consolidated their position during the conflict. Competition was revived by these changes. With the rebuilding and the progressive development of the newly independent countries, the consumption of steel still grew apace, on average 6 per cent, from 1950 to 1974.

Steel was at the heart of the construction of the European Community. In 1951, the European Coal and Steel Community replaced the private initiatives of the interwar period. Even if the British did not join, the explosion of the demand for steel because of the Cold War ensured stability for all European exporters until the end of 1960. The share of marketed steel production increased from 10.7 per cent in 1950 to 23.9 per cent in 1974, and the share of Western Europe in world steel trade was almost 70 per cent in 1950, and then decreased to 50 per cent in 1969.

Until the 1960s, the steel trade continued on a regional scale, Europe, North America and East Asia accounting for two thirds of the total. An increase in the Western European share of steel exchanges from 60 per cent to 75 per cent was made within this regional framework. The world trade still consisted of various parts, little connected with one another.

After 1974, the growth in steel consumption began to abate (an annual growth rate of 1,1 per cent on average), with a period of slowing down (1980s) followed by one of acceleration (1990s). These cyclic fluctuations were the principal cause of tension in the international market (see Figure 2). With the entry onto this market of more and more producing countries (Brazil, South Korea and others) and economic stagnation, these tensions were transformed into open conflicts.

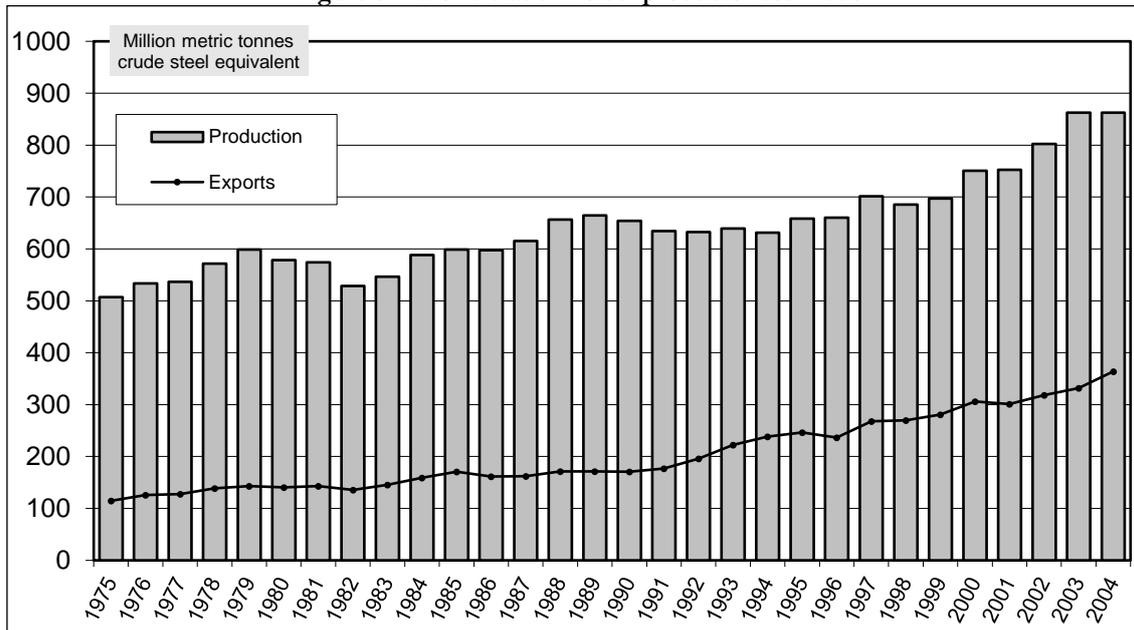
Figure 2. World trade in steel products 1950–1974



Source: International Iron and Steel Institute.1980.*Steel Statistical Yearbook*

In the 1980s—1990s, there were restructuring crises in the old producing countries, with the emergence of the minimills technology and the strength of Third World production. These new producers, selling their products in their national markets with difficulty, sought to sell abroad, using dumping techniques, which upset already precarious market balances. Other threats appeared, including that from Japan (trying even harder to export, after the oil crisis), the Eastern countries (focused on external markets), and with outsiders like Australia or Spain, as well as the dynamic area of Brescia in Italy (with small but formidable producers). This caused a ruthless battle, affecting the international strategy of all the great groups involved. To fight dumping, the European steel industrialists gathered within Eurofer, for more effective action by the Brussels authorities.

Figure 3 World trade in steel products 1875–2004



Source: International Iron and Steel Institute. 2006. *World Steel in Figures*

On the whole, from the 1980s, we see a profound change of balances and strength ratios on a worldwide scale. The former large producers were in decline, and newcomers took over. A very strong reinforcement of the globalization of iron and steel products trade began, which has not been countered since. However, the intraregional commercial share was reinforced over the 1980-92 period.

The steel trade quickly increased from 1980, and then slowed down from 1985 to 1989 (140 million tons in 1980, 175 million tons in 1992), because of strong increases in Chinese and American imports and due to demographic growth (see Figure 3). An increasingly strong share of steel consumption is part of international trade (28.5 per cent in 1985, 42 per cent in 2004). After the end of the 1990s (the Asian economic crisis), the producers have called for protective measures for their national markets because of falling prices and financial losses through to 2001. The irregularity of the international steel market during such a dynamic time also led to a sometimes-excessive optimism on the part of producers, who launched ambitious programs of expansion with significant consequences for world capacities, especially during periods of less dynamism.

Since 2002, the prices of iron and steel products have increased considerably because of an auspicious economic situation, high energy prices and especially thanks to the enormous and increasing demand from China. If the Asian growth and that of Eastern Europe continue, this tendency will not change any time soon. But the fast development of Chinese exports (350 million tons in 2005) may lead to new 'steel wars' in the future. However, transnational cooperation can avoid them. The Organization for Economic Cooperation and Development (OECD) Steel Committee gathers countries accounting for 81 per cent of world steel production and 86 per cent of world steel trade (in 2006). It is today the central organization of all international negotiations for the iron and steel market.

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